

CLAIMS

1. A method of transmitting data in a wireless communication system from a transmitter to a receiver, comprising the steps of

modulating data at the transmitter using a first signal constellation pattern to obtain a first data symbol,

transmitting the first data symbol to the receiver over a first diversity branch;

modulating said data at the transmitter using a second signal constellation pattern to obtain a second data symbol;

transmitting the second data symbol to the receiver over a second diversity branch;

demodulating the received first and second data symbol at the receiver using the first and respectively second signal constellation pattern; and

diversity combining the demodulated data.
2. The method according to claim 1, wherein the data to be transmitted contains at least one data packet comprising a plurality of data bits which are encoded using a forward error correction (FEC) scheme prior to modulation.
3. The method according to claim 2, wherein employed encoding scheme is a Turbo coding scheme.
4. The method according to one of claims 1 or 3, wherein the employed modulation scheme is a higher order modulation scheme such as M-PSK, M-QAM with $\log_2(M) > 2$ wherein the data bits mapped onto the data symbols have different bit reliabilities depending on the chosen mapping.
5. The method according to one of claims 1 to 4, wherein the signal constellation pattern for the first and second diversity branches are selected such that after combining the data bits, the differences in magnitude among the combined bit reliabilities are reduced.
6. The method according to one of claims 1 to 5, wherein the number of different mappings is equal to $\log_2(M)$.

7. The method according to one of claims 1 to 6, wherein the data for transmission is modulated using a single redundancy version scheme with an identical data bit sequence.
8. The method according to one of claims 1 to 7, wherein the data for transmission is modulated using a multiple redundancy version scheme of partly identical bits.
9. The method according to one of claims 1 to 8, wherein the first and second signal constellation patterns are pre-stored in a memory table.
10. The method according to one of claims 1 to 9, wherein the first and second signal constellation patterns are signaled to the receiver.
11. The method according to one of claims 1 to 10, wherein the properties of the first and second signal constellation patterns are obtained by interleaving the positions of and/or inverting the bit values of the bits mapped onto the signal constellation patterns.
12. The method according to one of claims 1 to 11, wherein the interleaving is performed with symbols resulting in an intra-symbol interleaving.
13. The method according to one of claims 1 to 12, wherein the data is transmitted with a plurality of redundancy versions, and the transmitted bits comprise systematic and parity bits and the systematic bits are included in each redundancy version.
14. The method according to one of claims 1 to 13, wherein the combined mean bit reliabilities for the systematic bits are higher than that of the parity bits.
15. A transmitter for transmitting data in a wireless communication system to a receiver, comprising:
 - a mapping unit for modulating data using a first signal constellation pattern to obtain a first data symbol;
 - a transmitting unit for transmitting the first data symbol to the receiver using a first diversity branch;

said mapping unit modulating said data using a second signal constellation pattern to obtain a second data symbol; and

said transmitting unit transmitting the second data symbol to the receiver using a second diversity branch.

16. The transmitter according to claim 15, further comprising table means for pre-storing the first and second signal constellation pattern.
17. The transmitter according to claim 15, further comprising an interleaver and/or inverter to obtain different signal constellation patterns.
18. The transmitter according to one of claims 15 to 17, further comprising a forward error correction (FEC) encoder for encoding the data prior to modulation.
19. A receiver as part of a wireless communication system, comprising:

receiving means for receiving a first and second data symbol respectively modulated using a first and second signal constellation pattern and transmitted over a first and second diversity branch, and

a demapping unit for demodulating the received first and second data symbol using the first and second constellation pattern respectively,

a combining unit for diversity combining the received data symbols.
20. The receiver according to claim 19, further comprising a memory means for storing received data prior to combining same.
21. The receiver according to claim 19 or 20, further comprising a forward error correction (FEC) decoder for decoding the combined first and second data after diversity combining.